Donna Calhoun

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Education

- **Ph.D. Applied Mathematics**. University of Washington (1999). Thesis : "A Cartesian grid method for solving the streamfunction vorticity equations in irregular geometries". Thesis advisor: Prof. Randall J. LeVeque.
- **M.S. Mathematics**. University of Washington, Seattle, WA. (1988). Master's degree specialization in optimization. Advisor : Prof. James Burke.
- **B.A. Mathematics**. Pomona College, Claremont, CA. (1985)

Academic Research Positions

- Assistant Professor (2011-present) **Dept. of Mathematics**, Boise State University, Boise, ID.
- CAES Affiliate Faculty (2012-2013) **Center for Advanced Energy Studies**, Idaho National Laboratory, Idaho Falls, ID.
- Visiting Fellow (Fall 2012) **Isaac Newton Institute for Mathematical Sciences**, Cambridge, England. Program : "Multiscale Numerics for the Ocean and Atmosphere".
- Acting Assistant Professor (2004 - 2005) **Dept. of Mathematics**, University of Washington, Seattle, WA.
- Post-doctoral researcher (2002-2004) **Dept. of Applied Mathematics**, University of Washington, Seattle, WA. Work supported by the Department of Energy SciDAC program. Research supervisor: Prof. Randall J. LeVeque.
- Post-doctoral researcher (1999-2002) **Courant Institute of Mathematical Sciences**, New York University, NYC, NY. Work supported by the Department of Energy. Research Supervisor: Prof. Marsha Berger.

Government and Industry Positions

- Research Engineer (2005 - 2010) **Commissariat l'Énergie Atomique**, *DEN/DM2S/SFME-/LTMF* Saclay, France. Division of Nuclear Energy.
- Summer Employee (Summer, 1995) **Lawrence Livermore National Laboratory**, Livermore CA. Center for Computational Sciences and Engineering. Research supervisor : Dr. Ann Almgren.
- Senior Analyst/Programmer (1991 - 1994) Hazardous Material Response and Assessment Division, Western Regional Office, **National Oceanic and Atmospheric Administration**, Seattle, WA.

Journal Publications and Refereed Conference Proceedings

- P. H. Lauritzen, P. A. Ullrich, C. Jablonowski, P. A. Bosler, D. Calhoun, et al. "A standard test case suite for 2d linear transport on the sphere: results from 17 state-of-the-art schemes", *Geosci. Model Dev. Discuss.*, (6), 4983-5076. `www.geosci-model-dev-discuss.net/6/4983/2013/` (2013).
- C. Burstedde and D. Calhoun and K. Mandli and A. R. Terrel, "ForestClaw: Hybrid forest-of-octrees AMR for hyperbolic conservation laws", *Proceedings of ParCo 2013*, September 10-13, 2013, Technical University of Munich, Munich, Germany. (accepted, 2013).
- J-R. Ling, D. Calhoun, C. Poupon, D. Le Bihan, "Numerical simulation of diffusion MRI signals using an adaptive time-stepping method", *Physics in Medicine and Biology*, (accepted November, 2013)
- D. Calhoun, C. Helzel, "A finite-volume method for solving parabolic equations on logically Cartesian curved surface meshes", *SIAM J. Sci. Comp.*, Vol. 31, Issue 6. pp. 4066–4099 (2009).
- M. Berger, D. Calhoun, C. Helzel, R. J. LeVeque, "Logically rectangular finite volume methods with adaptive refinement on the sphere", *Phil. Trans. R. Soc.*, Vol. 367, No. 1907, pp. 4483–4496 (2009).
- J. Li, D. Calhoun, L. Brush, "Efficient thermal field computation in phasefield models", *J. Comp. Phys.*, Vol. 228, Issue 24. pp. 8945–8957 (2009).
- D. Calhoun, C. Helzel, R. J. LeVeque. "Logically rectangular grids and finite volume methods for PDEs in circular and spherical domains". *SIAM Review* Vol. 50, Issue 4, pp. 723-752 (2008).
- D. Calhoun, H. Paillére. "Wave propagation algorithms and adaptive mesh refinement for CFD simulations of potential hydrogen explosions in nuclear containment structures". *Proceedings of the Joint International Topical Meeting on Mathematics and Computation and Supercomputing in Nuclear Applications.* Monterey, California, April (2007).
- D. Calhoun, C. Helzel, R. J. LeVeque. "A Finite Volume Grid for Solving Hyperbolic Problems on the Sphere", *Hyperbolic Problems : Theory, Numerics, Applications*, Springer. Proceedings of the Eleventh Int. Conf. on Hyperbolic Problems, Lyon, France. July 17-21 (2006).
- D. Calhoun and R. J. LeVeque, "An accuracy study of mesh refinement on mapped grids", Proceedings of the *Chicago Workshop on Adaptive Mesh Refinement*, September, 2003. Series: Lecture Notes in Computational Science and Engineering, Vol 41. December 2004.
- D. Calhoun, "A Cartesian grid method for solving the two-dimensional streamfunction vorticity equations in irregular regions", *J. Comp. Phys.*, Vol. 176, pp. 231-275 (2002).
- D. Calhoun, R.J. LeVeque, "Solving the advection-diffusion equation in irregular geometries", *J. Comp. Phys.* Vol. 157, pp. 143–180 (2000).

Grants

- National Science Foundation. "A parallel algorithmic framework for flexible time discretization on adaptive Cartesian meshes". PI : Donna Calhoun. Award Amount : $194,000. Funded (3 years, starting Aug. 2014).
- National Science Foundation. "Massively Parallel Adaptive Computational Methods for Improved Predictions of Atmospheric Flows over Complex Terrain" PI : Inanc Senocak (Dept. of Mech. Eng., BSU). Co-PIs : Donna Calhoun, Grady Wright (Dept. of Math., BSU), Elena Sherman (Dept. of Comp. Sci., BSU). Award Amount $500, 000). Funded (3 years, starting Sept. 2014).
- National Science Foundation. "Pacific Northwest Numerical Analysis Seminar 2012" (PNWNAS 2012). Award covered speakers and a limited number of students travel costs. PI : Donna Calhoun; Co-PIs : Grady Wright and Jodi Mead (Dept. of Math., BSU). Award Amount $8,200. Funded (July 2012).